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DERWENT-ACC-NO: 1998-026927

DERWENT-WEEK: 200538

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TITLE: Disposable diaper, having good fit, reduced skin irritation and good formability - having fastening tapes of elastic non-woven fabric of stretchable composite fibre comprising hard elastic crystalline polypropylene and thermoplastic elastomer components

## PATENT-ASSIGNEE:

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## BASIC-ABSTRACT:

A spreadable disposable diaper has a liquid-permeable front sheet, a liquid-impermeable back sheet and a liquid-retaining absorbent arranged between the sheets. A pair of diaper-fixing fastening tapes are arranged in the right and left side edges of the back portion. The tapes are of a stretchable elastic nonwoven fabric composed of a stretchable elastic composite fibre comprising a first hard elastic component of crystalline polypropylene and a second thermoplastic elastomer component. Pref. the tapes have a convex and a concave part of a mechanical fastener as an engaging means.

ADVANTAGE - The diaper has good fit, reduced skin irritation and good formability.

CHOSEN-DRAWING: Dwg.0/3

TITLE-TERMS: DISPOSABLE DIAPER FIT REDUCE SKIN IRRITATE FORMING FASTEN TAPE ELASTIC  
NON WOVEN FABRIC STRETCH COMPOSITE FIBRE COMPRISE HARD ELASTIC CRYSTAL  
POLYPROPYLENE THERMOPLASTIC ELASTOMER COMPONENT

DERWENT-CLASS: A96 D22 F07 P32

CPI-CODES: A12-V03A; D09-C03; F04-C01;

## ENHANCED-POLYMER-INDEXING:

Polymer Index [1.1] 018 ; R00964 G0044 G0033 G0022 D01 D02 D12 D10 D51 D53 D58 D83 ; H0000 ; H0011\*R ; S9999 S1105\*R S1070 ; S9999 S1150 S1070 ; S9999 S1183 S1161 S1070 ; P1150 ; P1343 Polymer Index [1.2] 018 ; ND01 ; K9676\*R ; K9483\*R ; K9518 K9483 ; Q9999 Q7294 ; Q9999 Q8004 Q7987 Polymer Index [1.3] 018 ; B9999 B4795 B4773 B4740 ; B9999 B3601 B3554 ; B9999 B5094 B4977 B4740 Polymer Index [2.1] 018 ; H0135 H0124 ; S9999 S1105\*R S1070 ; S9999 S1150 S1070 ; S9999 S1183 S1161 S1070 Polymer Index [2.2] 018 ; R00326 G0044 G0033 G0022 D01 D02 D12 D10 D51 D53 D58 D82 ; R00964 G0044 G0033 G0022 D01 D02 D12 D10 D51 D53 D58 D83 ; H0022 H0011 ; S9999 S1105\*R S1070 ; S9999 S1150 S1070 ; S9999 S1183 S1161 S1070 ; P1150 ; P1285 Polymer Index [2.3] 018 ; H0022 H0011 ; R00964 G0044 G0033 G0022 D01 D02 D12 D10 D51 D53 D58 D83 ; G0033\*R G0022 D01 D02 D51 D53 ; S9999 S1105\*R S1070 ; S9999 S1150 S1070 ; S9999 S1183 S1161 S1070 ; P1150 Polymer Index [2.4] 018 ; R00964 G0044 G0033 G0022 D01 D02 D12 D10 D51 D53 D58 D83 ; G0033\*R G0022 D01 D02 D51 D53 ; S9999 S1105\*R S1070 ; S9999 S1150 S1070 ; S9999 S1183 S1161 S1070 ; H0033 H0011 ; P1150 Polymer Index [2.5] 018 ; R00708 G0102 G0022 D01 D02 D12 D10 D19 D18 D31 D51 D53 D58 D76 D88 ; H0000 ; H0135 H0124 ; S9999 S1105\*R S1070 ; S9999 S1150 S1070 ; S9999 S1183 S1161 S1070 ; H0022 H0011 ; H0033 H0011 ; P1741 ; P1752 Polymer Index [2.6] 018 ; G0033\*R G0022 D01 D02 D51 D53 ; H0135 H0124 ; S9999 S1105\*R S1070 ; S9999 S1150 S1070 ; S9999 S1183 S1161 S1070 Polymer Index [2.7] 018 ; R00338 G0544 G0022 D01 D12 D10 D51 D53 D58 D69 D82 C1 7A ; H0022 H0011 ; H0033 H0011 ; H0135 H0124 ; S9999 S1105\*R S1070 ; S9999 S1150 S1070 ; S9999 S1183 S1161 S1070 ; P1796 Polymer Index [2.8] 018 ; P1592\*R F77 D01 ; H0135 H0124 ; S9999 S1105\*R S1070 ; S9999 S1150 S1070 ; S9999 S1183 S1161 S1070 Polymer Index [2.9] 018 ; P0839\*R F41 D01 D63 ; H0135 H0124 ; S9999 S1105\*R S1070 ; S9999 S1150 S1070 ; S9999 S1183 S1161 S1070 Polymer Index [2.10] 018 ; P0635\*R F70 D01 ; H0135 H0124 ; S9999 S1105\*R S1070 ; S9999 S1150 S1070 ; S9999 S1183 S1161 S1070 Polymer Index [2.11] 018 ; H0022 H0011 ; R00326 G0044 G0033 G0022 D01 D02 D12 D10 D51 D53 D58 D82 ; G0033\*R G0022 D01 D02 D51 D53 ; H0135 H0124 ; S9999 S1105\*R S1070 ; S9999 S1150 S1070 ; S9999 S1183 S1161 S1070 ; P1150 Polymer Index [2.12] 018 ; R00326 G0044 G0033 G0022 D01 D02 D12 D10 D51 D53 D58 D82 ; G0033\*R G0022 D01 D02 D51 D53 ; H0135 H0124 ; S9999 S1105\*R S1070 ; S9999 S1150 S1070 ; S9999 S1183 S1161 S1070 ; H0033 H0011 ; P1150 Polymer Index [2.13] 018 ; ND01 ; K9676\*R ; K9483\*R ; K9518 K9483 ; Q9999 Q7294 ; Q9999 Q8004 Q7987 Polymer Index [2.14] 018 ; B9999 B3872 B3838 B3747 Polymer Index [3.1] 018 ; R00806 G0828 G0817 D01 D02 D12 D10 D51 D54 D56 D58 D84 ; H0022 H0011 ; H0033 H0011 ; H0135 H0124 ; S9999 S1105\*R S1070 ; S9999 S1150 S1070 ; S9999 S1183 S1161 S1070 ; H0000 ; P0328 ; P0339 Polymer Index [3.2] 018 ; ND01 ; K9676\*R ; K9483\*R ; K9518 K9483 ; Q9999 Q7294 ; Q9999 Q8004 Q7987 Polymer Index [3.3] 018 ; B9999 B5049 B5038 B4977 B4740 Polymer Index [3.4] 018 ; B9999 B3872 B3838 B3747 Polymer Index [4.1] 018 ; R00429 G0828 G0817 D01 D02 D12 D10 D51 D54 D56 D58 D85 ; H0000 ; H0022 H0011 ; H0033 H0011 ; H0135 H0124 ; S9999 S1105\*R S1070 ; S9999 S1150 S1070 ; S9999 S1183 S1161 S1070 ; P0328 Polymer Index [4.2] 018 ; ND01 ; K9676\*R ; K9483\*R ; K9518 K9483 ; Q9999 Q7294 ; Q9999 Q8004 Q7987 Polymer Index [4.3] 018 ; B9999 B5050 B5038 B4977 B4740 Polymer Index [4.4] 018 ; B9999 B3872 B3838 B3747

## SECONDARY-ACC-NO:

CPI Secondary Accession Numbers: C1998-009168

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[Previous Doc](#)

[Next Doc](#)

[Go to Doc#](#)

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3. In the drawings, any words are not translated.

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**DETAILED DESCRIPTION**

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[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention is excellent in fit nature, its skin irritation is low, and it is related with the good disposable diaper of fabrication nature.

[0002]

[Description of the Prior Art] Before, the absorber of the liquid holdout which intervened as a disposable diaper between the surface sheet of liquid permeability, the rear-face sheet of liquid impermeability, and both sheets is provided, and what was matched for the right-and-left edges-on-both-sides section of the back with the FASUNINGU tape for diaper firm attachment of a pair is used widely. And in recently, in order to raise the fit nature and the leakage tightness of a diaper further, giving elastic elasticity to the above-mentioned FASUNINGU tape itself is proposed.

[0003] However, since the FASUNINGU tape was formed by usual rubber etc. when elastic elasticity was conventionally given to a FASUNINGU tape, there was a problem of a wearing person's skin being stimulated for this FASUNINGU tape in a wearing person's skin during wearing. Moreover, with the above-mentioned usual rubber, there was also a problem that fabrication nature was bad and inferior to productivity.

[0004] Therefore, the purpose of this invention is to offer the disposable diaper which was excellent in fit nature, and whose skin irritation was low and was excellent in fabrication nature.

[0005]

[Means for Solving the Problem] this invention persons did the knowledge of the ability of the disposable diaper which has the FASUNINGU tape which

comes to provide a specific flexible elastic nonwoven fabric to attain the above-mentioned purpose, as a result of inquiring wholeheartedly that the above-mentioned technical problem should be canceled.

[0006] This invention is what was made based on the above-mentioned knowledge. The surface sheet of liquid permeability, In the disposable diaper of the expansion mold with which the absorber of the liquid holdout which intervened between the rear-face sheet of liquid impermeability and both sheets was provided, and the FASUNINGU tape for diaper firm attachment of a pair was arranged on the right-and-left edges-on-both-sides section of the back The disposable diaper characterized by the above-mentioned FASUNINGU tape coming to provide the flexible elastic nonwoven fabric which consists of a flexible elastic bicomponent fiber which uses as the 1st component the hard error stick component which consists of crystalline polypropylene, and uses thermoplastic elastomer as the 2nd component is offered.

[0007]

[Embodiment of the Invention] Hereafter, the disposable diaper of this invention is further explained to a detail. It is characterized by the disposable diaper of this invention coming to provide the flexible elastic nonwoven fabric of specification [ a FASUNINGU tape ].

[0008] The above-mentioned flexible elastic nonwoven fabric used in this invention consists of a flexible elastic bicomponent fiber which uses as the 1st component the hard error stick component which consists of crystalline polypropylene, and uses thermoplastic elastomer as the 2nd component.

[0009] The above-mentioned crystalline polypropylene used as a hard error stick component which is the 1st component of the above can be especially used without a limit, if it has hard error stick nature. As a desirable example of the above-mentioned crystalline polypropylene, the homopolymer of a propylene, a copolymer with the ethylene which makes a propylene a subject, a copolymer with the alpha olefin which makes a propylene a subject, etc. are mentioned.

[0010] As for the above-mentioned crystalline polypropylene, it is desirable that the degree of crystallinity is 40% or more. If the above-mentioned degree of crystallinity is not filled 40%, the elongation recovery factor of fiber may become inadequate. in addition, the above-mentioned degree of crystallinity -- DSC (differential scanning calorimetry) -- it is the value computed based on the energy which fusion of the crystal measured according to law takes.

[0011] As for the above-mentioned crystalline polypropylene, it is desirable

that the melt index is 1-200g / 10 minutes, and it is still more desirable that they are 3-50g / 10 minutes. If the above-mentioned melt index is not filled in 1g / 10 minutes, melt viscosity is too high, and since the thread breakage may occur before melt viscosity is too low and fibroses if spinning may become difficult and it exceeds 200g / 10 minutes, it is desirable to consider as above-mentioned within the limits. In addition, the above-mentioned melt index is ASTM. It is the value measured under 230 degrees C and a 2.16kgf load according to D-1238.

[0012] Moreover, as for the above-mentioned crystalline polypropylene, it is desirable that the point which flexible elasticity is easily discovered and can carry out spinning of the above-mentioned bicomponent fiber easily to the weight average molecular weight is 10,000-1 million, and it is still more desirable that it is 20,000-600,000.

[0013] Generally the above-mentioned thermoplastic elastomer used as the 2nd component of the above consists of a flexibility component (a soft segment, elasticity phase) which has rubber elasticity in a molecule, and a molecule restricted component (a hard segment, hard phase) for preventing plastic deformation. The above-mentioned thermoplastic elastomer can be classified according to the class of the hard segment, a styrene system elastomer, an olefin system elastomer, a vinyl chloride system elastomer, an urethane system elastomer, an ester system elastomer, an amide system elastomer, syndiotactic poly (1, 2-butadiene), Pori (a transformer -1, 4-isoprene), etc. can be preferably used for it in this invention, and an urethane system elastomer and an ester system elastomer can be preferably used for it especially.

[0014] The urethane system elastomer which consists of the block which has a urethane bond as a hard segment, and the block which has polycarbonate system polyol, ether system polyol, caprolactone system polyester, or horse mackerel peat system polyester as a soft segment as the above-mentioned urethane system elastomer, for example is mentioned. Moreover, the ester system elastomer which consists of the block which has aromatic polyester as a hard segment, and the block which has an aliphatic series polyether or aliphatic series polyester as a soft segment as the above-mentioned ester system elastomer, for example is mentioned.

[0015] Moreover, especially the thing for which the ethylene-alpha olefin copolymer manufactured according to well-known technique is used as the above-mentioned thermoplastic elastomer in consideration of workability, cost, lightfastness, chemical resistance, skin irritation, etc., using a well-

known metallocene compound as a catalyst is desirable. In the above-mentioned ethylene-alpha olefin copolymer, a carbon number is mentioned for alpha olefin of 3-30, for example, propylene, 1-butene, 1-pentene, 1-hexene, 1-octene, 1-heptene, 4-methyl-1-pentene, 4-methyl-1-hexene, 4, and 4-dimethyl-1-pentene, octadecene, etc. as an alpha olefin which carries out copolymerization to ethylene. 1-hexene, 1-octene, 1-heptene, and 4-methyl-1-pentene are preferably used also in these. The blending ratio of coal of the ethylene and the alpha olefin in the above-mentioned ethylene-alpha olefin copolymer is desirable, ethylene is 40 - 98 % of the weight, and an alpha olefin is 60 - 2 % of the weight.

[0016] In this invention, in order to reform the melting fluidity of these thermoplastic elastomer, thermoplastics, an oil component, etc. may be added to these thermoplastic elastomer.

[0017] The above-mentioned thermoplastic elastomer has it from the point which becomes possible [ not causing destruction but following it to actuation of the body, ], when that the elongation recovery factor at the time of the 100% elongation is 50% or more uses for example, the above-mentioned flexible elastic nonwoven fabric for garments. [ desirable ]

[0018] Moreover, the permanent set is desirable, the above-mentioned thermoplastic elastomer is 0 - 30% still more preferably 50% or less, and a hysteresis ratio is the ethylene-alpha olefin copolymer of 1.0-3.5 still more preferably 5.0 or less preferably. When the above-mentioned permanent set is 50% or less, the fixable field at the time of using the above-mentioned flexible elastic nonwoven fabric for various products can be made large, and when the above-mentioned hysteresis ratio is 5.0 or less, the responsibility of the above-mentioned flexible elastic nonwoven fabric becomes good. On the other hand, if the above-mentioned permanent set exceeds 50%, or if the above-mentioned hysteresis ratio exceeds 5.0, since the fit nature on the FASUNINGU tape which comes to provide the above-mentioned flexible elastic nonwoven fabric may fall, it is not desirable.

[0019] It is measured as following by carrying out the above-mentioned permanent set and the above-mentioned hysteresis ratio, respectively. The measuring method of a permanent set; The die length of the sample at the time of considering as an early distance between chucks like the measuring method of the following hysteresis ratio, after extending a sample 100% is measured. the die length (the die length of the part which the initial length halfbeak was also extended and became long) to the initial length (early distance between chucks) at the time of extending 100% which cannot loosen

-- it asked for (%) comparatively and this was made into the permanent set. The measuring method of a hysteresis ratio; in order to investigate the elasticity of each sample, the hysteresis ratio was measured using the stretch test machine with addition equipment. That is, it is JIS about the sample (sheet) created by the above-mentioned thermoplastic elastomer. It sets based on L1015 and L1096. Subsequently Extend each sample 100% at the rate of 300 mm/min, and an extension curve is created. The hysteresis ratio was computed by having stopped loosening in the place where it loosened at the succeeding same rate, and between chucks became 100mm of the first die length, having created the relaxation curve, having measured the area under an extension curve and a relaxation curve respectively, and having substituted these for the degree type.

Hysteresis ratio = area under the area / relaxation curve under an extension curve [0020] In the above-mentioned bicomponent fiber, still more preferably, the content of the 1st component of the above is 10 - 60 % of the weight, the content of the 2nd component of the above is 90 - 40 % of the weight, much more preferably, preferably, the content of the 1st component of the above is 5 - 70 % of the weight, the content of the 2nd component of the above is 95 - 30 % of the weight, and the content of the 2nd component of the above is [ content of the 1st component of the above is 10 - 50 % of the weight, ] 90 - 50 % of the weight. If the content of the 1st component of the above exceeds the above-mentioned upper limit or the content of the 2nd component of the above does not fulfill the above-mentioned minimum, the elasticity of the above-mentioned bicomponent fiber may become inadequate. The area which the 2nd component of the above will expose to the front face of the above-mentioned bicomponent fiber if the minimum of the above [ the content of the 1st component of the above ] is not fulfilled or the content of the 2nd component of the above exceeds the above-mentioned upper limit increases. In tactile feeling's falling, since it may become difficult to carry out spinning of the bicomponent fiber of a sheath-core type, it is desirable to consider as above-mentioned within the limits.

[0021] If the above-mentioned bicomponent fiber is the fiber gestalt which may discover flexible elasticity, there will be especially no limit in the fiber gestalt. As a desirable fiber gestalt of the above-mentioned bicomponent fiber, a parallel connected type (side-by-side mold), an assembled die (that by which the fiber cross section was divided in the shape of radii), a sheath-core type [a sheath core mold (a concentric circle mold and eccentric mold)], etc. are mentioned. The above-mentioned bicomponent fiber can be manufactured by



considering as each above-mentioned fiber gestalt using the 1st component of the above, and the 2nd component of the above by the well-known spinning approach.

[0022] the above -- from the point of making with a direct-after spinning web, and forming a nonwoven fabric, or making a flexible property discovering further, after giving the above-mentioned bicomponent fiber manufactured by the well-known spinning approach to after [ spinning ] predetermined extension processing, it may be made with a web and may form a nonwoven fabric. As conditions for the above-mentioned extension processing, it is desirable that extension temperature is 20-130 degrees C, and it is desirable that draw magnification is one to 6 times. Heating means, such as hot blast, a steam, and infrared radiation, can be used for heating of the above-mentioned flexible elastic bicomponent fiber in the above-mentioned extension processing.

[0023] As for the above-mentioned bicomponent fiber, it is desirable that the diameter of fiber is 1-20 deniers, and it is still more desirable that it is 2-6 deniers. Since the spinning nature in a spinning process falls and it may be hard coming to fibrose, if the above-mentioned diameter of fiber does not fulfill 1 denier, and aesthetic property may get worse in the practicality of the above-mentioned flexible elastic nonwoven fabric if it exceeds 20 deniers, it is desirable to consider as above-mentioned within the limits.

[0024] As for the above-mentioned bicomponent fiber, it is desirable that the elongation recovery factor at the time of the 100% elongation is 20 - 100%, and it is still more desirable that it is 50 - 100%. If the above-mentioned elongation recovery factor is not filled to 20%, when the above-mentioned flexible elastic nonwoven fabric is used for garments, functioning [ follow actuation of the body ] may become inadequate, for example.

[0025] The above-mentioned bicomponent fiber may be used with the gestalt of a staple fiber like a staple fiber, and may be used with the gestalt of continuous glass fiber like a continuous filament.

[0026] Although the above-mentioned flexible elastic nonwoven fabric has especially the desirable thing that consists of 100% of above-mentioned bicomponent fibers, it may be mixed with other fiber. In mixing the above-mentioned bicomponent fiber with other fiber, it contains the above-mentioned flexible elastic nonwoven fabric 50% of the weight or more still more preferably 30% of the weight or more, including the above-mentioned bicomponent fiber preferably. If the amount of the above-mentioned bicomponent fiber is not filled to 30% of the weight, the flexible elasticity of

the above-mentioned flexible elastic nonwoven fabric may fall remarkably, and may fracture. Regenerated fibers, such as rayon and acetate, the various binder fiber which can be welded by the above-mentioned heat treatment are mentioned at natural fibers, such as thermoplastic synthetic fibers, such as the fiber which does not deteriorate by heat treatment in a nonwoven fabric formation process as other fiber which can be mixed with the above-mentioned bicomponent fiber, for example, polyolefine, polyester, and a polyamide, a cotton, hemp, and wool, and a list.

[0027] The above-mentioned flexible elastic nonwoven fabric can be manufactured by the approach and the direct sheet method for using a carding machine, and, specifically, can be manufactured according to nonwoven fabric manufacturing methods, such as mix spinning of resin bond and binder fiber, a heat roll, and a water need link. As the above-mentioned web formation approach, when using staple fibers, such as a staple fiber, as the above-mentioned bicomponent fiber, the approach of making carry out filamentation of this bicomponent fiber using a carding machine, and forming a web is mentioned. Moreover, when using continuous glass fibers, such as a continuous filament, as the above-mentioned bicomponent fiber, high-speed airstream is made to convey the above-mentioned bicomponent fiber which carried out melt spinning, and deposition and the approach (the span bond method) of making carry out filamentation and forming a web are mentioned on a migration network.

[0028] As an approach (the thermal bond method) of heat-treating the formed web and forming a nonwoven fabric, the inside of a through air dryer is passed for this web, thermal melting arrival of between the confounding points of the configuration fiber of this web is carried out by hot blast, for example, and the approach of forming many pasting up points is mentioned. In this case, although the temperature and the amount of supply of hot blast are based on the class list of the configuration fiber of the above-mentioned web at a basis weight, a bearer rate, etc. of the above-mentioned web, generally it is desirable that the temperature of hot blast is 140-170 degrees C, and it is desirable that the rate of flow or a wind speed is a part for 0.5-3m/. Moreover, heat embossing using the embossing roll of a pair which consists of an engraved roll and a smooth roll is mentioned as an exception method of the above-mentioned heat treatment. In this case, heat embossing is performed by heating and using either of both [ these ] the rolls, or both. As for whenever [ stoving temperature / of an embossing roll ], it is desirable to consider as 120-170 degrees C. If an embossing roll is heated to temperature higher than

this, the above-mentioned web may paste this embossing roll. The iron roll sculptured into various patterns, for example on the front face as the above-mentioned engraved roll can be used. On the other hand, as the above-mentioned smooth roll, a paper roll, a rubber covered roll, a silicon rubber covered roll, an urethane rubber covered roll, a metal roll, etc. can be used. As an example of the pattern of the above-mentioned engraved roll, there are a pin, a point dot, a tortoise shell, a grid, pinstripes, a disk, a stitch, a pattern, etc., and there is nothing what is limited to especially the pattern, for example. Although the linear pressure of the embossing roll at the time of the above-mentioned heat embossing is based on whenever [ stoving temperature / of an embossing roll ] etc. at the basis weight and bearer rate list of the above-mentioned web, it is desirable as general range that it is 10-150kg/cm.

[0029] As for the above-mentioned flexible elastic nonwoven fabric, it is desirable that the elongation recovery factor at the time of the 20% elongation is 40 - 100%, and it is still more desirable that it is 60 - 100%. If the above-mentioned elongation recovery factor is not filled to 40%, when the above-mentioned flexible elastic nonwoven fabric is used for garments, the flattery to actuation of the body etc. may be inadequate and resistance may become large, for example.

[0030] the above-mentioned flexible elastic nonwoven fabric -- the basis weight -- 5 - 200 g/m<sup>2</sup> it is -- things -- desirable -- 15 - 80 g/m<sup>2</sup> it is -- things are still more desirable. The above-mentioned basis weight is 5 g/m<sup>2</sup>. If it does not fill, the above-mentioned elongation recovery factor may become it is small and inadequate, and it is 200 g/m<sup>2</sup>. When it exceeds, nonwoven fabric formation by the thermal bond method becomes difficult, and since it is disadvantageous in cost, it is desirable to consider as above-mentioned within the limits.

[0031] Moreover, the above-mentioned flexible elastic nonwoven fabrics are the 0.5 g/cm<sup>2</sup>. It is desirable that the thickness under a load is 0.05-5mm, and it is still more desirable that it is 0.2-2mm. When a fiber consistency may become high and may become inadequate [ a flexible property ], if the above-mentioned thickness does not fulfill 0.05mm, and it exceeded 5mm and the above-mentioned flexible elastic nonwoven fabric is used for garments, since sense of incongruity is given, it is desirable practically to consider as above-mentioned within the limits.

[0032] Next, with reference to a drawing, one gestalt of the disposable diaper of this invention is further explained to a detail. Here, drawing 1 is the expansion perspective view showing the FASUNINGU tape in the disposable

diaper in which the rear-face sheet side in one gestalt of the disposable diaper of this invention is shown, and which is a fracture top view a part and shows drawing 2 to drawing 1 . Moreover, drawing 3 is the expansion perspective view showing other gestalten of the FASUNINGU tape used for this invention.

[0033] The disposable diaper 1 of this gestalt shown in drawing 1 possesses the surface sheet 2 of liquid permeability, the rear-face sheet 3 of liquid impermeability and both the sheets 2, and the absorber 4 of the liquid holdout which intervened among three, and the FASUNINGU tape 10 for diaper firm attachment of a pair is arranged on the right-and-left edges-on-both-sides section B1 of Back B, and B-2. Moreover, the landing tape 9 for the above-mentioned FASUNINGU tape firm attachment is formed in the abbreviation center section of the antinode flank A.

[0034] Moreover, the solid guard 8 who has free-end 8b is allotted to the way side among the diapers formed on the above-mentioned surface sheet 2 by fixing watertight sheet 8a to a way side outside a diaper. In addition, although a usually well-known thing can be especially used without a limit as the above-mentioned watertight sheet, a hydrophobic nonwoven fabric, the nonwoven fabric given a water-repellent finish are used preferably. Such a configuration is the same as that of the conventional disposable diaper, and can also form each part material especially, using a well-known ingredient without a limit.

[0035] And the above-mentioned FASUNINGU tape 10 comes to provide the above-mentioned flexible elastic nonwoven fabric 16.

[0036] Furthermore, if it explains in full detail, it will fix on the body 11 of a tape, and the surface sheet 2 of a diaper, the front face will be made free by exfoliation, and the above-mentioned FASUNINGU tape 10 will consist of a release tape (not shown) which the field where the binder of the stop section 13 was applied at the time of un-using it is made to contact, and protects this field. Moreover, the end face section 12 which was joined to the rear-face sheet 3 and fixed as the above-mentioned body 11 of a tape was shown in drawing 1 , The flexible section 15 which are formed successively by this end face section 12, and is formed with the above-mentioned flexible elastic nonwoven fabric 16 (refer to drawing 2 ), It connects with this flexible section 15, and consists of the stop section 13 in which the binder was applied and formed at the whole surface (surface sheet side), and the knob section 14 which turned up the tip of this stop section 13 and was formed. If the structure of the above-mentioned FASUNINGU tape 10 is further explained in full

detail with reference to drawing 2 , it is formed in one with the ingredient 16 with same above-mentioned end face section 12 and above-mentioned flexible section 15, i.e., the above-mentioned flexible elastic nonwoven fabric, and the above-mentioned flexible section 15 and the above-mentioned stop section 13 are connected through the joint 18.

[0037] Moreover, the above-mentioned stop section 13 is formed by the film sheet and binder which are used for the usual FASUNINGU tape. Moreover, the above-mentioned joint 18 is joined in this gestalt by carrying out carrying out heating welding of the end of the above-mentioned flexible section 15, and the end of the above-mentioned stop section 13 partially etc., and pasting up partially, although formed by joining the above-mentioned flexible section 15 and the above-mentioned stop section 13 especially, using the usual junction approach without a limit. Moreover, by carrying out carrying out heating welding partially etc., and pasting up partially, you may join to the above-mentioned back, and the above-mentioned end face section 12 may be joined with heat embossing, an ultrasonic seal, etc.

[0038] Moreover, elastic members 20 and 30 are also allotted to the leg section 6 located in the circumference of the waist section 5 located in a wearer's waist at the time of wear of a diaper, and a foot, respectively. Moreover, the elastic member 40 is allotted to the above-mentioned free-end 8b also in the above-mentioned solid guard 8. Among the diapers in this solid guard 8, in free-end 8b by the side of a way, the above-mentioned elastic member 40 is covered with this watertight sheet 8a, and is allotted from turning up the edge side of the above-mentioned watertight sheet 8a in the shape of tubing.

[0039] Even if a wearing person hits, as for skin irritation, there are [ the disposable diaper of this gestalt ] few above-mentioned FASUNINGU tapes during wearing, while being able to lengthen the stop section 13 of the above-mentioned body 11 of a tape, being able to attach a diaper firmly, excelling in fit nature and excelling in leakage tightness, since it is constituted like \*\*\*\*.

[0040] Next, with reference to drawing 3 , other gestalten of the FASUNINGU tape used for the disposable diaper of this invention are explained in full detail. FASUNINGU tape 10A of the gestalt shown in drawing 3 is formed so that it may become broad, as end face section 12A is made as it is broad, and flexible section 15A goes to the end face section 12A side, and its fit nature is improving further by this. In addition, all points other than this are the same as the FASUNINGU tape of the gestalt shown in drawing 1 mentioned above and 2, and the explanation mentioned above is

applied suitably.

[0041] In addition, the disposable diaper of this invention is not restricted to the gestalt shown in drawing 1 , but can be variously changed in the range which does not deviate from the meaning of this invention. Moreover, as for the above-mentioned FASUNINGU tape 10, the all may be formed with the above-mentioned flexible elastic nonwoven fabric. Moreover, as the above-mentioned FASUNINGU tape 10, it may replace with an above-mentioned binder and the heights material or crevice material of a mechanical fastener may be provided as the stop means in the front-face side (surface sheet side of a diaper) of the above-mentioned stop section. Under the present circumstances, as the above-mentioned heights material used or crevice material, usual heights material and usual crevice material can be especially used without a limit. Moreover, when the above-mentioned heights material is used as the above-mentioned stop means, the above-mentioned landing tape 9 is crevice material, and when the above-mentioned crevice material is used as the above-mentioned stop means, the above-mentioned landing tape 9 is heights material.

[0042]

[Effect of the Invention] The disposable diaper of this invention has low skin irritation, and it is excellent in fabrication nature.

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[Translation done.]